

DSMS Telecommunications Link  
Design Handbook

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# 901 Handbook Glossary

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Document Owner::

Robert W. Sniffin      12/11/00  
R. W. Sniffin      Date

Approved by:

K. R. Kimball      14 DEC 00  
K. R. Kimball      Date  
Manager, DSMS Implementation  
Engineering

Released by:

[Signature on file at TMOD Library]  
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### ***Change Log***

<b>Rev</b>	<b>Issue Date</b>	<b>Affected Paragraphs</b>	<b>Change Summary</b>
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### ***Note to Readers***

There are two sets of document histories in the 810-005 document, and these histories are reflected in the header at the top of the page. First, the entire document is periodically released as a revision when major changes affect a majority of the modules. For example, this module is part of 810-005, Revision E. Second, the individual modules also change, starting as an initial issue that has no revision letter. When a module is changed, a change letter is appended to the module number on the second line of the header and a summary of the changes is entered in the module's change log.

This module supersedes Appendix A in 810-005, Rev. D.

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## ***1 Introduction***

### ***1.1 Purpose***

The purpose of this document is to present a useful glossary of commonly used terms, abbreviations, and acronyms that are current and applicable to the Deep Space Network (DSN) and the Telecommunications and Mission Operations Directorate (TMOD) of the Jet Propulsion Laboratory.

### ***1.2 Scope***

This scope of this document is limited to providing terms, abbreviations, and acronyms that are used within Document 810-005 and especially those that may be different from usage in other organizations.

Terms, abbreviations, and acronyms are included in this document if they meet any of the following criteria:

- used within the DSN or TMOD but with a meaning that may be unique to the DSN or TMOD,
- used within 810-005 in place of equivalent terms, abbreviations, and acronyms that may be used elsewhere, or
- commonly used in the field of telecommunications engineering but not necessarily known to all users of 810-005.

### **1.3            *Revisions***

This glossary will be periodically revised with changes, improvements, or additions. Usually, these revisions will be coincident with the publication of new or revised 810-005 modules that contain new or revised terminology.

### **1.4            *Definitions***

The following paragraphs define the types of items that appear in this glossary and give general rules for their formation.

#### **1.4.1        *Terms***

A *term* is any word or expression that has a precise meaning in a particular field, in this case, telecommunications engineering.

#### **1.4.2        *Abbreviations***

An *abbreviation* is a shortened or contracted form of a word or phrase. In a strict sense, the letters are individually pronounced (for example, rpm or DSN) or the reader might visualize and pronounce the complete form of the word (for example, “assembly” for “assy” or “telemetry” for “TLM”).

#### **1.4.3        *Acronyms***

An *acronym* is a pronounceable abbreviation formed by one of two methods:  
(1) combining the first syllables of the key words (for example, Caltech or FORTRAN) or  
(2) combining the first letter and other letters, as required, from the name or key words of an organization, project, or piece of equipment (for example, AMMOS or LAN).

### **1.5            *Controlling Documents***

The terms, abbreviations, and acronyms contained in this document are intended to be consistent with those defined in JPL internal publication, DSMS Requirements and Design — DSMS Terms and Abbreviations; DSMS Document 820-062 which serves as the controlling document for this module

## 2 *Abbreviations and Terms*

<i>Abbreviation or Term</i>	<i>Definition</i>
<b><i>A</i></b>	
A-D	analog-to-digital
A/S	anti-spoofing mode of operation (Global Positioning System) in which the encrypted, or Y-code, is unavailable to civilian users of the system
AFC	automatic frequency control
AGC	automatic gain control
alidade	The rotating but non-tilting portion of the DSN azimuth- elevation antennas.
AM	amplitude modulation
AMP	amplifier
AMMOS	Advanced Multimission Operations System
ARC	ambiguity resolving code
ASM	attached synchronization marker
atm	atmospheric
az	azimuth
AZ-EL	azimuth-elevation
<b><i>B</i></b>	
B2MCD	Block II Maximum Likelihood Convolutional Decoder
B3MCD	Block III Maximum Likelihood Convolutional Decoder
B/W	bandwidth
BER	bit error rate
BET <sub>L</sub>	lock bit error tolerance
BET <sub>S</sub>	search bit error tolerance
Boltzmann constant	-198.6 dBW/(Hz · K)
BPSK	binary phase shift keying
BVR	Block V Receiver (part of DTT Subsystem)

***Abbreviation  
or Term***

***Definition***

BWG Beam Waveguide (antenna or subnet)

***C***

c speed of light, 299,792.5 km/s

Category A missions within 2 million km of Earth

Category B missions at distances greater than 2 million km from Earth

C/A Coarse Acquisition (GPS code)

CCSDS Consultative Committee for Space Data Systems

CCW counter-clockwise

CD cumulative distribution

CDSCC Canberra (Australia) Deep Space Communications Complex

CONSCAN conical scanning

CPA Command Processor Assembly

cryo cryogenic

CSS Channel-Select Synthesizer

CV connection vector

CW clockwise

***D***

D/C downconverter

D/L downlink

dB decibel(s)

dBc decibel(s) with respect to carrier

dB<sub>i</sub> decibel(s) with respect to isotropic

dB<sub>m</sub> decibel(s) with respect to one milliwatt

DCC Downlink Channel Controller

DCPC DTT Controller Processing Cabinet

DDC Digital Downconverter

dec declination

deg degree(s)

DIG digitizer (assembly)

***Abbreviation  
or Term******Definition***

DLT	digital linear tape
DMC	DSS Monitor and Control
DMD	DSS Media Calibration Subsystem
DN, dn	down
DRVID	differenced range versus integrated Doppler
DSCC	Deep Space Communications Complex
DSN	Deep Space Network
DSMS	Deep Space Mission System
DSS	Deep Space Station
DSS 14	70-m antenna at Goldstone DSCC
DSS 15	34-m HEF antenna at Goldstone DSCC
DSS 16	26-m antenna at Goldstone DSCC
DSS 23	11-m antenna at Goldstone DSCC
DSS 24	34-m BWG antenna at Goldstone DSCC
DSS 25	34-m BWG antenna at Goldstone DSCC
DSS 26	34-m BWG antenna at Goldstone DSCC
DSS 27	34-m HSB antenna at Goldstone DSCC
DSS 33	11-m antenna at Canberra DSCC
DSS 34	34-m BWG antenna at Canberra DSCC
DSS 43	34-m HEF antenna at Canberra DSCC
DSS 45	34-m HEF antenna at Canberra DSCC
DSS 46	26-m antenna at Canberra DSCC
DSS 63	34-m HEF antenna at Madrid DSCC
DSS 65	34-m HEF antenna at Madrid DSCC
DSS 66	26-m antenna at Madrid DSCC
DSS 53	11-m antenna at Madrid DSCC
DSS 54	34-m BWG antenna at Madrid DSCC
DTF	Development and Test Facility
DTK	DSS Tracking (Subsystem)
DTT	Downlink Telemetry and Tracking (Subsystem)

***Abbreviation  
or Term***

***Definition***

***E***

EIRP	effective isotropic radiated power
el, EL, elev	elevation
EOP	Earth Orientation Parameters (of the International Earth Rotation Service [IERS])

***F***

F/O	fiber optic
FCD	feedback concatenated decoding
FER	frame error rate
FET	field-effect transistor
FFT	fast Fourier transform
FM	frequency modulation
FOM	figure of merit
FSK	frequency-shift keyed
FTP	file transfer protocol
FTS	Frequency and Timing Subsystem

***G***

G/T	(antenna) gain divided by (operating system) temperature
GCF	Ground Communications Facility
GDSCC	Goldstone (California) Deep Space Communications Complex
GPS	Global Positioning System
GRA	GPS Receiver/Processor Assembly
GSFC	Goddard Space Flight Center

***H***

H/P	high power
HA	hour angle
HEF	high efficiency (antenna)



***Abbreviation  
or Term***

***Definition***

HEMT	high-electron-mobility (field-effect) transistor
HPBW	half-power beamwidth
HRM	high-rate (radio loss) model
HSB	High (angular-tracking) Speed Beam Waveguide (antenna)

***I***

I/F	interface
IDC	IF to Digital Converter
IERS	International Earth Rotation Service
IF	intermediate frequency
ITRF	IERS Terrestrial Reference Frame
ITU	International Telecommunications Union

***J-K***

JPL	Jet Propulsion Laboratory
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***L***

L/P	low power
LCP	left (-hand) circular polarization
LNA	low noise amplifier
LRM	low-rate (radio loss) model
LSB	least significant bit

***M***

MAP	maximum <i>a posteriori</i> probability
MASER	microwave amplification by stimulated emission of radiation
max	maximum
MB	medium bandwidth
MCD	Maximum Likelihood Convolutional Decoder
MDA	Metric Data Assembly
MDSCC	Madrid (Spain) Deep Space Communications Complex

***Abbreviation  
or Term***

***Definition***

MED	minimum error detection
MFR	Multi-function Receiver
MGC	manual gain control
min	minimum
MOCC	Mission Operations Control Center
mod	modulation
MRT	major range tone

***N***

NA; N/A	not applicable
NASA	National Aeronautics and Space Administration
NAV	Navigation (Subsystem)
NB	narrowband, narrow bandwidth
NCO	numerically controlled oscillator
NMC	Network Monitor and Control (Subsystem)
NOAA	National Oceanic and Atmospheric Administration
NOCC	Network Operations Control Center
NRZ	non-return to zero
NRZ-L	non-return to zero, level
NRZ-M	non-return to zero, mark
NRZ-S	non-return to zero, space
NSP	Network Simplification Plan
NTIA	National Telecommunications and Information Administration
NTK	NOCC Tracking (Subsystem)

***O***

OQPSK	offset quadriphase-shift keying
OVLBI	Orbiting Very-long Baseline Interferometry

***P***

PCG	Phase Calibration Generator (part of FTS)
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***Abbreviation  
or Term***

***Definition***

PCM	pulse-code modulation
PDF	probability density function
	portable document format (type or extension of computer file)
PDRVID	pseudo-DRVID
PLL	phase-locked loop
PM	phase modulation
PN	pseudo-random noise
POCC	Project Operations Control Center
PSK	phase-shift keyed
PTS	Precision Telemetry Simulator

***Q***

QPSK	quadriphase-shift keying
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***R***

R/T	real-time
RCP	right circular polarization
rev	revision
RF	radio frequency
RH	relative humidity
RID	RF to IF Downconverter
RMDC	Radio-Metric Data Conditioner
RMS; rms	root-mean-square
RNG	range
RNS	Reliable Network Service
RRP	Receiver Ranging Processor
RS	Reed-Solomon (code), radio science
RSR	Radio Science Receiver
rss, RSS	root-sum-square
RTL T	round-trip light time
RU	range unit

***Abbreviation  
or Term***

***Definition***

***S***

S/C	spacecraft
SCA	Subsystem Control and Monitor Assembly
SEP	Sun-Earth-Probe (angle)
SFU	solar flux units (one SFU = $1 \times 10^{-22}$ W/m <sup>2</sup> /Hz)
SNR	signal-to-noise ratio
SPC	Signal Processing Center
SPD	S-Band Polarization Dipole (feedcone)
SRA	Sequential Ranging Assembly
stowed	With respect to an antenna, aimed near zenith for protection from the wind.
sub, subcarr	subcarrier
SYM	symbol
SYS	system

***T***

TBD	to be determined
TDDS	Tracking and Data Delivery System
TDRSS	Tracking and Data Relay Satellite System
TEC	total vertical electron content
TLM	telemetry
TMOD	Tracking and Mission Operations Directorate
T <sub>OP</sub>	T sub OP (operating system temperature)
TXR	transmitter or Transmitter Subsystem

***U***

U/L	uplink
ULNA	ultra low-noise amplifier
UPA	Uplink Processor Assembly
URA	Uplink Ranging Assembly

<b><i>Abbreviation or Term</i></b>	<b><i>Definition</i></b>
USO	Ultra-Stable Oscillator
UTC	Universal Time, Coordinated
<b><i>V</i></b>	
	vacuum
VCO	voltage controlled oscillator
VLBI	very-long baseline interferometry
<b><i>W</i></b>	
W/B, WB	wideband
WD	waveform distortion
<b><i>X</i></b>	
X-EL	cross-elevation
XMIT	transmit
XRO	X-band receive only (feedcone)
XTR	X-band transmit-receive (feedcone)
<b><i>Y</i></b>	
yr	year
<b><i>Z</i></b>	
ZDD	Zero-delay Device
ZEN	zenith